

I CLAIM:

1
2
3 1. A multi-part, separable plunger assembly
4 comprising:

5 a sleeve with an open end;

6 said open end further comprising construction from
7 a ferrous material;

8 a plug with a top comprising a mating member to the
9 open end;

10 said plug further comprising a magnet; and

11 wherein said magnet couples the open end to the
12 plug.

13
14 2. The plunger of claim 1, wherein the open end
15 further comprises a female mating member, and the plug top
16 further comprises a male mating member.

17
18 3. The plunger of claim 2, wherein the plug top
19 further comprises a removable cap which secures a magnet in
20 a hollow in a plug body.

21
22 4. The plunger of claim 3, wherein the hollow further
23 comprises a non-magnetic isolator means functioning to

1 radiate longitudinally a field of magnetic waves and improve
2 a magnetic coupling from the magnet to the sleeve open end.
3

4 5. The plunger of claim 1, wherein the sleeve further
5 comprises a pad plunger with spring-loaded interlocking
6 pads.
7

8 6. The plunger of claim 1, wherein the sleeve further
9 comprises a solid ring sidewall plunger.
10

11 7. The plunger of claim 1, wherein the sleeve further
12 comprises a shifting ring sidewall plunger.
13

14 8. The plunger of claim 1, wherein the sleeve further
15 comprises a brush sidewall plunger.
16

17 9. A plunger for a well producing through a
18 production string communicating with a hydrocarbon
19 formation, said plunger comprising:

20 at least two separable sections, each section
21 movable independently downwardly in the well;
22 said sections being united at a bottom of the well
23 for upward movement together in the well; and

1 wherein at least two of said sections have a
2 magnetic coupling therebetween.

3

4 10. The plunger of claim 9, wherein one section
5 further comprises an upper sleeve, and one section further
6 comprises a lower plug, and said lower plug has a magnet
7 which couples to an open end of the sleeve.

8

9 11. The plunger of claim 10, wherein the lower plug
10 further comprises a non-magnetic isolator, thereby
11 improving the magnetic coupling to the sleeve.

12

13 12. A multi-part, separable plunger assembly
14 comprises:

15 a sleeve means functioning to allow fluids to pass
16 through its center when traveling downwardly in
17 a well while separated from a plug means;

18 said plug means functioning to prevent the fluids
19 from passing through the sleeve center while the
20 plug means is coupled to the sleeve means; and

21 a magnetic coupler means functioning to
22 magnetically couple the sleeve means to the plug
23 means;

24

1 13. The plunger assembly of claim 12, wherein the plug
2 means further comprises a ball made of ferrous material, and
3 the magnetic coupler means further comprises a magnet on the
4 sleeve means.

5

6 14. The plunger assembly of claim 12, wherein the plug
7 means further comprises a plug having a top portion with a
8 magnet therein.

9

10 15. A multi-part, separable plunger assembly
11 comprising:

12 a sleeve with an open end;

13 said open end further comprising a spring-loaded
14 retaining ball;

15 a plug with a top comprising a mating groove for
16 the spring-loaded retaining ball; and

17 wherein said spring-loaded retaining ball couples
18 the open end to the plug.

19

20 16. A multi-part, separable plunger assembly
21 comprising:

22 a sleeve with an open end;

23 said open end further comprising a retaining
24 groove;

1 a plug with a top comprising a mating O ring to the
2 retaining groove; and
3 wherein said mating O ring couples the open end to
4 the plug.

5
6 17. A multi-part, separable plunger assembly
7 comprising:

8 a sleeve with an open end;
9 said open end further comprising a flexible locking
10 clamp;
11 a plug with a top comprising a male mating member
12 to the open end;
13 said plug further comprising a receiving groove for
14 the clamp; and
15 wherein said clamp couples the open end to the
16 plug.

17
18 18. A multi-part, separable plunger assembly
19 comprising:

20 a sleeve with an open end having a mechanical
21 coupler means functioning to releasably secure a
22 top of a plug; and

1 said plug top further comprising a coupler mate
2 means functioning to mate with the sleeve
3 mechanical coupler means.

4
5 19. A multi-part, separable plunger assembly
6 comprising:

7 a sleeve with an open end;
8 said open end further comprising a spring-loaded
9 retaining ball;
10 a bottom mechanism comprising a ball sized for
11 retention by the spring-loaded retaining ball; and
12 wherein said spring-loaded retaining ball couples
13 the open end to the bottom mechanism.

14
15 20. A multi-part, separable plunger assembly
16 comprising:

17 a sleeve with an open end;
18 said open end further comprising a retaining
19 groove;
20 said retaining groove having a compression ring;
21 a bottom mechanism comprising a ball sized for
22 retention by the compression ring; and

1 wherein said compression ring couples the open end
2 to the bottom mechanism.

3
4 21. A multi-part, separable plunger assembly
5 comprising:

6 a sleeve with an open end;
7 said open end further comprising a flexible locking
8 clamp;
9 a bottom mechanism comprising a ball sized for
10 retention by the flexible locking clamp; and
11 wherein said clamp couples the open end to the
12 bottom mechanism.

13

14 22. A multi-part, separable plunger assembly
15 comprising:

16 a sleeve with an open end having a magnet coupler
17 means functioning to releasably secure a plug;
18 and
19 said plug further comprising a ball means
20 functioning to mate with the sleeve magnet
21 coupler means.
22